

How to Make Waste Reduction and Recycling Happen in Your School



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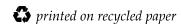


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Introduction

Waste management programs are now happening in schools throughout Washington State and your school should be a part of this important effort.

What are the components of waste management? They are waste reduction, recycling, composting, and selective purchasing.

By law, **waste reduction** is the first priority in Washington for waste management. Waste reduction means the prevention or elimination of waste materials at the point of generation. Waste isn't generated in the first place. Waste reduction can also reduce the toxicity of materials. In addition, waste reduction means reusing materials, prolonging a material's life or providing an alternative use. **Purchasing** durable goods and repairing goods are also waste reduction methods.

Waste reduction practices can be introduced in any school. Purchasing provides many opportunities. Does your school purchase recyclable or recycled materials? Do you use non-toxic or less toxic chemicals? In laboratory experiments, do you conduct micro-experiments to reduce waste? An inventory of purchases and a study of methods of your school's operation will reveal potential areas for waste reduction in administration, classroom, kitchen and custodial services.

What is recycling? It is the collection and reprocessing of manufactured materials, either in the same form or as part of a different product. In the past, aluminum can recycling has been a common operation in schools. Now materials such as paper, glass, other metals and certain plastics are recycled. In addition to other forms of recycling, schools may **compost** yard wastes and/or food wastes.

Why recycle? Recycling saves energy, conserves resources, reduces disposal costs, preserves landfill space and helps the environment. Does recycling make money? Yes, recycling aluminum and certain other materials can be a profit-making enterprise during favorable market conditions. However, recycling isn't recommended for a primary fund-raiser for your class or club, because of fluctuating market prices. However, a comprehensive waste reduction and recycling plan may save a school district money in avoided costs for garbage disposal.

How does recycling work? It may include source separation and collection of materials, monitoring and recording totals, preparation of recyclables for transport or transporting the materials to the recycler. It may include market research and a change in purchasing practices for your school.

What else can a waste management program do? It provides a positive environmental experience for the school community. Waste reduction and recycling concepts and implementation procedures are important elements of a comprehensive environmental education program in classroom lessons for grades K-12 in all school disciplines from art to wood shop.

Why not start a waste reduction and recycling program now? Administrators, teachers, clerical staff, students, custodians, and parents may participate in school waste reduction and recycling programs. By including the whole school community, waste management can be a greater success and also become an educational outreach program to the community at large.

Background

Legislation

In 1989 the Washington State Legislature passed into law ESHB 1671, the "Waste Not Washington" Act. The bill included many provisions for handling and disposal of solid waste, established solid waste management priorities, targeted recycling rates in Washington State and required development of K-12 school waste reduction and recycling programs.

State Solid Waste Management Priorities

The solid waste priorities are, in descending order (RCW 70.95.010):

- 1) waste reduction,
- 2) recycling, with source separation of recyclable materials as the preferred method,
- 3) energy recovery, incineration or landfill of separated waste,
- 4) energy recovery, incineration or landfill of mixed wastes.

It is the state's goal to achieve a 50 percent recycling rate by 1995.

Waste Reduction and Recycling Awards Program

Section 54 of ESHB 1671 (RCW 70.95C.120) establishes the in-school waste reduction and recycling awards program for K-12 public schools.

Schools were grouped into three classes for the purpose of granting the awards. In the 1989-90 school year, one \$10,000 award was granted for an elementary school, one \$10,000 award to a middle/ junior high school, and one award to a senior high school. This process was repeated in 1990-91. The awards were presented at the Capitol Rotunda each June. The Legislature modified the awards program for the 1992 and 1993 school years to allow for five \$2,000 awards for each of the three classes for a total of 15 awards in place of the three larger awards. Two additional \$5,000 awards were presented to schools for the "best" recycling and waste reduction categories. These awards were presented at the Capitol Rotunda in May 1992. An informational letter and application forms are mailed to each public school in Washington State each fall.

Sample School District Waste Management Policy

School districts and individual schools have developed policies for implementation of waste reduction and recycling programs, including procurement issues. In some school districts, waste management is one part of a complete energy conservation policy. The Washington School Directors' Association (WSDA) has a basic six step procedure for adopting district policies used throughout the state.

In 1991, the Legislature passed Substitute Senate Bill 5143, the "Buy-Recycled Law." This law requires public schools to substantially increase the procurement of recycled content products. The example School District Waste Management Policy, Appendix B, p. 29, contains provisions for buying recycled items. However, to receive complete information regarding the "Buy Recycled Law" and its impact for schools, contact David Block at the Department of General Administration, phone 206-586-7453 or SCAN 321-7453.

Environmental Education Requirement

In 1990, the State Board of Education and the State Superintendent of Public Instruction established environmental education as an interdisciplinary instructional requirement in Washington State schools in grades K-12. Environmental education "will be" taught at all grade levels through science, social studies and humanities. Recycling "will also be" emphasized and practiced as part of school management.

Purpose and Organization of Guidelines

This guidelines manual fulfills the mandate of Section 54 of ESHB 1671, passed into law as RCW 70.95C.120. The purposes of the guidelines manual are:

- Develop guidelines for program development and implementation of waste reduction and recycling in K-12 public schools.
- Prepare materials for distribution to aid in implementation of programs to reduce and recycle waste generated in school administrative offices, classrooms, laboratories, cafeterias, and maintenance operations.

Information on successful waste reduction and recycling techniques currently used in Washington schools provided by the awards program are included in this manual. These proven strategies, developed and implemented by K-12 schools, can be modified to suit the needs of your school.

How To Use This Manual

The manual outlines a step-by-step program for schools beginning a waste reduction and recycling program. It gives advice on choosing a recycler, contracting with the recycler, establishing and maintaining a program. For advanced school programs the manual offers some suggestions for expanding activities to include innovative strategies for waste reduction, recycling and purchasing policies.

Each chapter describes a particular aspect of a total program Topics include waste reduction and recycling techniques for traditional classrooms, science laboratories, art classrooms, clerical and administrative offices, agricultural programs, kitchens, custodial services and maintenance garages. The manual provides composting and disposal information for yard waste and/or food waste.

How much solid waste does your school create? Waste audits in schools indicate a rate from one-half pound of solid waste per student to about one pound per student per day. During the 180-day school year, each student produces between 90 and 180 pounds of solid waste. How much waste does your school produce in one year?

Washington's goal of recycling 50 percent of our waste by 1995 is a great challenge and opportunity for your school. By reducing waste and recycling right now, schools can lead the way for all of us. So lets get started!



Waste Reduction

What is waste reduction? Waste reduction is the prevention or elimination of waste at the point of generation. Reduction means not generating waste in the first place, reducing the amount or toxicity of waste generated, or reusing materials. Waste reduction suggestions are listed below and in the sections discussing each of the operational departments.

Purchasing

Pre-Purchase Review

At the time of purchasing materials consider the following:

- Is this item or quantity a necessary purchase?
- Is the item made of recycled and/or recyclable materials?
- Is there a more durable alternative for this item?
- Is a less toxic or more easily recyclable substitute available?
- What is the cost/benefit to purchase recyclable substitute items?
- Can this item have an adaptive reuse after the purchase use?
- How will this item be disposed of?

Practices Currently Used in Washington Schools

The Washington State Department of Ecology found the following waste reduction practices in use in public schools in 1992.

Classrooms and Administrative Offices

- Half-sheet for memos
- Memos routed instead of copying them
- Electronic mail in place of memos
- Eliminate the use of Post-Its
- Purchase refillable pens and cartridges
- Purchase mechanical pencils
- Purchase copy machine which copies on both sides of the paper
- Use cloth or electric hand dryers rather than paper towels
- Use direct mail rather than fax machines
- Reuse envelopes
- Eliminate use of window envelopes
- Lessons and student drills on blackboards instead of paper
- Overhead projector used in place of student handouts
- Verbal responses for evaluation instead of paper and pencil
- Don't use consumable workbooks
- Back-to-back work sheets



- Make-handout paper copies for the exact student count
- Waste paper and scraps reused in math and art classes
- Library reissues student copies of research materials
- Older periodicals circulated to classrooms for reuse
- Discarded envelopes used for scratch paper
- Colored butcher paper reused
- Scratch pads made from recovered paper
- Cardboard boxes reused for storage
- Newspapers shared with second and third families
- Students writing on both sides of paper
- A school "paperless" day
- Copy paper covers distributed for textbook book covers
- Paper sacks used as book covers
- Double-sided copies for handouts and work sheets
- Waste reduction list placed in classroom
- Laminated master sheets for teacher's reuse

Custodial Services

- Plastic liners no longer used in garbage cans
- Electric hand dryers or washable linen cloth replace paper towels
- Bulk purchasing of cleaning solutions
- Diapers reused as cleaning rags
- Purchase toilet paper and paper towels made of recycled paper
- Replace toxic cleaners with less toxic or non-toxic alternatives
- Use less toxic and non-toxic yard and garden chemicals
- Reuse plastic liners in garbage cans
- Reusable plastic recycle bins

Food Services

- Ceramic cups instead of disposables
- Alternative purchases for hard-to-recycle plastic items
- Reusable aluminum and hard plastic trays for hot lunches
- Metal silverware to replace disposable plastic utensils
- Egg cartons and plastic jugs used to store supplies
- Five-gallon plastic containers reused as waste baskets
- Purchase food products in bulk to reduce packaging
- A "garbageless" lunch by using reusable containers
- A kitchen steam boiler that reduces cooking time and energy consumption









Laboratory

- Purchase chemicals that are less toxic to the environment
- Order small quantities of chemicals to prevent waste
- Practice micro-chemistry in laboratory experiments
- Establish an in-district inventory, exchange and storage program

Miscellaneous

- Exchange table for "naturally packaged" foods
- Thrift store for exchange of reusable items
- School tables, chairs and desks refurbished and repaired
- Milk cartons used as planter cups
- Cloth towels (not paper) used for cleanup in science room
- Bottle caps and pop tops used for counting activities
- Environmental pledge signed by students to reduce waste
- Automatic on-off motion sensor lights
- Clothing drive for sharing with other families
- Reusable materials found in recycle bins sorted and reused
- End-of-the-year exchange of reusable pads, pens, etc.

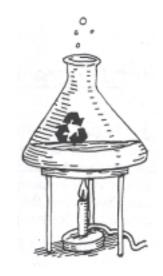
Procurement

- Purchase solar powered calculators
- Buy recycled products when feasible
- Make alternative purchases for difficult-to-recycle plastic item
- Obtain rechargeable batteries
- Implement a waste reduction awareness procurement policy
- Each room maintaining a "reusable bin"

One school district recommended reducing the amount of waste during the last week of school by collecting and saving reusable items for the next school year. A dumpster check the final week of school found these reusable items: pens, pencils, rulers, notebooks, erasers, string, stickers, reusable sheets of paper, three-ring binders, scissors, toys, paper clips, books, trapper keepers, and other reusable paper items. A thrift store or reuse table with items set aside for the following September term will reduce waste.

Waste Reduction Resources

Waste reduction ideas can be solicited from other schools. Establish a school district exchange of information. Find out what methods of waste reduction are effective in schools of similar size. Also research market availability. Your local city or county solid waste division of the public works department has waste reduction information and education materials for staff, students and parents.





Recycling Programs

Recycling Program Development

Recycling is separating recoverable materials from the waste stream after they have been generated as wastes, and then reprocessing the materials into new products. Recycling is the most visible means of waste management in schools. Recycling has become part of our daily lives. With the advent of ESHB 1671, the "Waste Not Washington Act" recycling efforts have rapidly increased in Washington schools.

Steps in Establishing a Recycling Program

- 1. Form a committee to develop strategies and goals
- 2. Designate a coordinator to oversee the program
- 3. Conduct a waste audit to determine the needs of your program
- 4. Research your market, contact/contract with local recyclers or haulers
- 5. Design a step-by-step separation and collection system
- 6. Provide waste management education and training for staff and students
- 7. Implement recycling
- 8. Monitor the ongoing program and make necessary revisions
- 9. Re-launch the program with new incentives or contests

The Committee

Committee Membership

The committee membership should include representatives from administration, faculty, clerical staff, library, custodians, purchasing office, student body and parent organizations. Input from all segments of the school community increases the likelihood of a successful waste management program.

Duties of the Committee

The waste management committee develops goals and plans the school waste reduction and recycling program. Each phase or step should be carefully planned. A good resource recovery program has the above listed basic steps in planning, implementing, operating and maintaining the program.

After designing the program, the committee designates a program coordinator. In some schools a school administrator, a custodian and a teacher work together as co-coordinators.

Example Goals

- Reduce waste produced
- Reduce disposal costs
- Conserve resources and save energy
- Educate students and staff in waste management concepts
- Establish and maintain a waste reduction and recycling program
- Purchase recycled products whenever feasible

Duties of the Coordinator

- Oversee the waste management Program
- Act as liaison to all school groups
- Contact the local fire marshal regarding fire code regulations
- Select recycler(s) and develop contract
- Maintain contacts with the recycler
- Establish time lines for implementing the program
- Monitor implementation of each step of the program
- Coordinate and schedule self-haul volunteers
- Make regular progress reports to the waste management committee



Waste Audits

See Appendix A: "Waste Audit and Cost/Benefit Analysis," p. 30.

Market Research and Contract With Recycler or Hauler

After you have completed a waste audit or other research into the content of your waste stream, contact recyclers and haulers in your area for market research. Recyclers operate profit-making businesses, and different recyclers collect different materials, offer different prices and provide different services. Negotiate with recyclers on the price they will pay for materials and what services they will provide.

Some schools do business with more than one recycler. They may send materials to two or three different recycling businesses, depending upon prices for recyclables, collection schedules, materials the recycler will take, distance to the recycler, equipment provided by the recycler, or other considerations.

Questions for Recyclers

Which materials will you accept?

Which materials will you pay for? How much?

Which materials will you accept at no cost?

What materials will you accept only for a fee? How much?

How should materials be separated, collected and stored in preparation for the recycler?

If the school self-hauls, what are your hours of service or other important regulations?

What Services will the Recycler Provide? Will the recycler:

Provide containers?

Distribute promotional materials?

Help organize the program?

Provide transportation of recyclables from the school? "Scheduled" service or "on call"?

Monitor and report totals of materials being recycled and amount of money earned by the school?



Contract

Negotiate a contract with a vendor. The contract should be for the entire school year, if possible. Fluctuating markets and fuel cost increases are reasons for a contract. The year round contract provides consistency of service. If you are a new program and wish to add materials later in the school year, include this provision in the contract.

To identify recyclers in your vicinity, check in the yellow pages of your local phone book, call the Ecology's Recycling Information Line, **1-800-RECYCLE** or call your local city or county solid waste division of the public works department.

Transportation Options

Contract-Haul

Some recyclers and garbage haulers will transport your recyclables. The collector usually provides large outdoor bins or dumpsters for contract-hauling. Some collectors are willing to collect materials with profitable markets but won't take other recyclable materials.

Self-Haul

Self-hauling is a commonly used option considering current market conditions. The school will need a van or pickup truck to haul the recyclables. Teachers, custodians, parents or the local PTA are possible self-haulers. Money received from recyclable materials can be used to help defray hauling expenses. Some recyclers take self-hauled materials that they won't collect on-site.



Other Transportation Options

Pickup by an existing intra-school delivery system or municipal collection are available in some school districts. Information on municipal collection systems are available from the city solid waste division. Intra-school delivery systems options are sometimes available within a school district. Contact the facilities department at your school district office. The PTA can be a source of vehicles and drivers for taking recyclables to markets.

Recycling Program Implementation Plan

Design and implementation

- Develop collection plan
- Obtain fire marshal approval
- Prepare training materials
- Train staff and students
- Have an assembly to promote the program
- Coordinate with the PTA
- Place containers
- Begin recycling
- Monitor the program
- Make appropriate changes
- Re-launch your program with new incentives

A successful recycling program takes careful planning Once you have conducted a waste audit to determine what is recyclable in your school waste stream, you can design your program. If you are unable to conduct a waste audit, the following information from other school waste samples may be helpful.

Sample Waste Stream

What materials found in the waste stream are recyclable? By weight, approximately 50 percent of the school solid waste stream consists of recyclable materials (Bloom, 1990). Paper, the largest waste stream component by weight, comprises between 30 and 40 percent of the typical school waste stream (Guttchen 1991). For further information on typical school waste stream items see the Appendix "Cost Benefit Analysis and Waste Audit."

Listed below are items recycled in Washington State schools in the 1991-1992 school year.

- * White ledger paper
- * Mixed paper
- * Newsprint
- * Paper bags
- * Phone books
- * Steel (tinned) cans
- * Glass
- * Food wastes
- * HDPE plastic
- * Motor oil
- * Furniture
- * Laboratory chemicals
- * Shoes
- * Batteries





- * Computer paper
- * Cardboard
- * Construction paper
- * Books
- * Catalogues
- * Aluminum
- * Other metals
- * PET plastic
- * Polystyrene
- * LDPE plastic
- * Paint shop residues
- * Computer printer ribbons
- * Wood products
- * Milk cartons



Some items listed above don't have markets in all parts of the state. For example, certain paper and plastic items have limited markets.

New Programs

Get off to a good start by recycling one or two items, such as aluminum and high grades of white paper. A successful beginning is very important. Education, promotion, collection methods, participation rates, storage and delivery services all need to be functioning properly before you develop a more complex program. Schools often begin a recycling program with an assembly put on by the local city or county solid waste division, a local recycler or a school class or club.

After you have recycled successfully for two or three months, add a new item to your program. Be sure to obtain permission **in advance** from your recycler to add materials as your program progresses. Other new activities you can add are composting yard or food wastes.

Advanced Programs

Schools with successful waste reduction and recycling efforts for at least one complete school year may develop more comprehensive techniques. Areas for advancement include education programs and purchasing.

In addition, waste reduction practices and the number of items recycled can also be increased. Schools may initiate community outreach programs or expand them. Some schools that have developed advanced programs have designed their own manual or plan of operation and provided expertise for other schools.

Comprehensive waste audits (see Appendix A) will reveal new areas for waste reduction and recycling. For example, the purchasing agent for your district may buy recyclable items or recycled items for the school. In addition you may substitute reusable or durable items in place of non-recyclable or less durable items. Custodial services, maintenance garages, agriculture programs, wood, auto and metal shop programs may purchase less toxic or non-toxic substitute materials.

Add new difficult-to-recycle or compostable items to your list. Examples are plastics, food items for worm bin composting or swine feeding, compostable yard and garden items, and used motor oil from the school bus maintenance division.

Advanced programs sometimes operate exchange programs or thrift stores, or community outreach projects for recycling. The local PTA or a student club can organize and operate the recycling outreach program.



Paper Recycling

Because paper comprises the largest percentage of the waste stream, methods for recycling paper are given here as a separate section.

- Separate paper from other waste, and collect paper in designated recycling containers.
- Collect paper daily.
- Deposit accumulated paper in central containers.
- Pickup/deliver recovered paper to recycler/hauler.

Consult with your local fire marshal when developing any portion of the collection and storage system. Local fire codes may prohibit the storage of paper in open containers. Other codes may require fire resistance in storage containers. Paper should be neatly stacked or bundled, never crumpled up. Some schools store their collected paper outside the school building in bins to save space in the school and to reduce the risk of a fire.

Have your local fire marshal walk through your building with you **before** you initiate the program, to get first hand advice on your storage and central collection system or other fire code concerns that may need to be addressed.

The Collection Plan

Classroom Paper

Classroom paper, is usually sorted and separated into two categories: white paper and mixed paper. Some recyclers take all recyclable paper in one container as mixed paper.

Separate high-grade white paper from mixed paper by utilizing **source separation** techniques by type during paper collection. With the **dual bin system**, place two small collection bins in each classroom. Suggested locations for the bins are by the classroom entrance or near the teachers desk (for monitoring purposes).

When source-separating white paper from mixed paper, one bin contains all white paper i.e. white notebook paper, white ledger paper and computer paper. If enough computer paper is generated, you may wish to separate it from other white paper because some recyclers have a separate market for white computer paper. The second bin contains mixed paper, i.e., colored ledger paper, construction paper, butcher paper.

Coordinate with your recycler which grades of paper they want separated. Strategically place signs listing the types of paper allowed in each bin or create a poster with examples of appropriate types of paper for each bin. Then prominently display the poster near the recycled paper bins.

Office Paper

Source separation of paper for collection requires desk-side dual bins or the **Desk-top system**, which provides one small container on each staff member's desk, with two compartments, one for high-grade white paper and the other compartment for recyclable mixed paper. Place dual compartments at each work station. Offices use a higher percentage of white ledger paper and computer paper than classrooms.

Clerical and administrative staff separate white ledger paper from mixed paper at their work station. When the desk-top container is filled, the paper is taken to a central collection container. Daily paper collection is made from each work station as well as each classroom. If you have newsprint, three bins or compartments may be placed at appropriate work stations, or a special bin in the faculty room or library may be designated for newsprint.

Paper is collected once a day from work stations and classrooms and taken to central storage. Teachers, custodians, students or PTA volunteers are possible collection personnel.

Cardboard

Cardboard is a large item in the school waste stream. It is generated in kitchens, libraries, custodial work stations, administrative offices, laboratories and classrooms. Cardboard boxes can be reused for storing recyclable items or school supplies. It can also be recycled. Unless specified otherwise by your recycler, cardboard should be broken down and flattened for storage and transportation to the recycler.

Library

In addition to white paper and mixed paper, the library generates newsprint, books, catalogues and cardboard. Place a separate collection bin for newsprint in the library or faculty room or central storage area. Schedule special collection days for books and catalogues as needed.

Central Storage

Designate a central collection station and storage space. The collection station and storage area(s) should be accessible, but away from traffic areas. It is helpful to place containers in the computer center, copy machine work room or other areas where large amounts of paper are used. Remember paper collected from classrooms and staff work stations will also be stored at the central storage area.

Supply enough container space for the entire building for one day's supply of paper. Fire codes will not allow crumpled paper, therefore paper must be stacked neatly in non-flammable containers. One option is to collect the paper at a central point, then empty the central containers daily in outside bins near the garbage dumpster. This provides easy access for the hauler, saves limited building space and aids fire prevention.

On a space-available basis, other recyclable materials such as cardboard or aluminum cans may also be stored at the central collection site

Selection of Central Collection Station

- Design and locate the collection station in accordance with fire code regulations.
- Provide necessary weather and vandalism protection.
- Label containers clearly for each recyclable material.
- Locate your central collection center for convenient hauling.
- Design the system for possible expansion.